


Instructor: Dr. Leslie Suters Office: H-214 Office Phone: 481-2000 Ext. 2320 Email: lsuters@tntech.edu Office Hours: schedule as needed	ELED 3152 Teaching of Mathematics in the Elementary School Credit – 3 semester hours Prerequisite or Co-Requisite if applicable: Full Admission to the Teacher Education Program; ELED 4142, ELED 3140, FOED 3800
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	Conceptual Framework Graphic/Statement The graduate of the teacher education program at TTU will be a competent, caring professional who can work effectively in a diverse, technological society. Candidates will demonstrate: <ul style="list-style-type: none"> • an appropriate level of scholarship, • effective communication, • a level of responsibility consistent with professional behavior, • skills of reflection that promote self-evaluation and growth, • respect for diversity, and • skills of collaboration with other professionals, families, and community.
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Conceptual Framework Statement

The **knowledge element** enables professionals to

1. use strong understanding of subject matter and general knowledge to enable students to learn and communicate effectively with others, and
2. use technological knowledge and collaborative techniques to foster active inquiry, problem solving, and performance skills among learners.

The **performance element** enables professionals to

1. understand and establish an effective learning environment that possess the skills, techniques, and strategies to do so, including those that provide opportunities for student intellectual, social, and personal development, and
2. use reflection continually and improve outcomes assessment, resulting in improved learning experiences.

The **disposition element** enables professionals to

1. create a climate of openness, inquiry, and support by practicing strategies that foster relationships of acceptance, appreciation, and value for diverse individuals and groups in the larger community, and
2. recognize ethical, professional standards and strive for continual personal improvement.

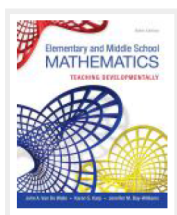
Class Meetings G-216 Monday 9:00-12:00

See assignment calendar for additional details and exceptions

There is an iLearn component to this course. elearn.tntech.edu

Course description: Using modern methods and strategies for teaching mathematics and translating theory into practice.

Required Texts, Readings, and Supplies



Elementary and Middle School Mathematics: Teaching Developmentally, Enhanced Pearson eText with Loose-Leaf Version -- Access Card Package (9th Edition) (Teaching Student-Centered Mathematics Series) Loose Leaf – January 25, 2015
ISBN-13: 978-0134046952

A **notebook** (3-ring binder) to use for a learning log

TN State Math Standards available @ https://www.tn.gov/assets/entities/sbe/attachments/4-15-16_V_A_Math_Standards_Attachment.pdf (Given in class)

Recommended Memberships

- National Council of Teachers of Mathematics (NCTM): Membership forms may be found at <http://www.nctm.org/membership/content.aspx?id=7618>. Student memberships are \$44 per year. There is a FREE 120-Day Prospective Teacher Resource Sampler available at <http://www.nctm.org/resources/sampler/>.
- Tennessee Math Teachers Association <https://tmta.wildapricot.org/join-us>

Attendance Policy

Due to the amount of content covered, students are required to attend each class. If a situation arises which requires you to be absent, you should notify your professor immediately.

Note: All absences should be supported with documentation presented to your professor upon your return to class. Please be advised that according to TTU Policy more than 3 absences can result in course failure.

Disposition Grade

Ten percent of your course grade will be determined by your educational dispositions, which include the following:

Attendance; Tardies – includes late arrival and leaving early; Collaboration; Communication; Scholarship; Respect; Responsibility; Reflection

Assignment Policy

Assignments are due as described on the assignment calendar. Late assignments will not be accepted unless there are extenuating circumstances, which will be determined on a case-by-case basis. If the instructor deems it appropriate and agrees to accept a late assignment, the student will incur a late penalty of 20% of the final grade for each day it is late (including Saturday and Sunday).

Important Note: You may be asked to revise an assignment in order to help you better learn the material. The final grade for the revised assignment will be an average of the original grade and the grade earned for the revised work.

Cell Phone Etiquette

Cell phones should be turned off or on vibrate and not used during class. Only exceptions will be the use of the phone as a calculator, stopwatch, or other application for in-class work.

TTU Library Online Access

The Tennessee Tech Library is available to all candidates enrolled at TTU. Links to the library materials (such as electronic journals, databases, interlibrary loans, digital reserves, dictionaries, encyclopedias, maps, and librarian support) and Internet resources are available to complete assignments. To access the online databases, use your TTU PC Lab username and password. If you do not know your TTU username and password see the following:

<https://www.tntech.edu/its/password.htm>.

More information on electronic media is available at the TTU Library

<http://www.tntech.edu/library/>.

Copyright and Fair Use

All projects created in this course should follow appropriate copyright and fair use guidelines.

Additional information is available at:

<http://www.utsystem.edu/ogc/intellectualproperty/cprtindx.htm>

Please note: TTU personnel may display your work created during the scope of this course during accreditation, conference presentations, workshops, and/or future classes.

TTU Office of Disability Service

Candidates with a disability requiring special accommodations should contact the Office of Disability Services (ODS). An Accommodation Request (AR) should be completed as soon as possible, preferably by the end of the first week of the course. The TTU Office of Disabilities is located in the Roaden University Center (RUC), Room 112; Phone 931-372-6119. For additional information see <http://www.tntech.edu/disability/>

Pandemic Plan

Should normal classroom activities at your placement be disrupted by a pandemic outbreak, the format for this course may be modified to enable completion. In that event, new instructions for the continuation of the course will be provided (Source: TTU University Faculty Meeting, August 25, 2009).

TTU Plagiarism Policy

When you use (for example, quote or even summarize or paraphrase) someone else's media, words, data, ideas, or other works, you must cite your source. You should be especially careful to avoid plagiarizing Internet sources (for example, e-mail, chat rooms, Web sites, or discussion groups). It does not matter whether you borrow material from print sources, from the Internet, from on-line databases, or from interviews. Failure to cite your source is plagiarism. Students who plagiarize may receive an "F" or a "0" for the assignment, or an "F" for the course.

<http://www.tntech.edu/ttustudenthandbook/academic-regulations/>

Major Teaching Methods: lecture, class discussion and reflection, practical application, group collaboration, media presentations, Internet research, and field exploration

Topics Covered:

1. Standards
 - a. TN State Math Standards <https://www.tn.gov/education/article/mathematics-standards>
 - b. NCTM Standards for Math <http://www.nctm.org/standards/content.aspx?id=16909>
2. Representing and explaining mathematical ideas

- a. Differentiating between conceptual and procedural knowledge
- b. Concrete-Representation- Abstract (CRA) Progression
- c. Math academic vocabulary/language
- d. Technology integration
- 3. Leading whole class discussions about mathematics
 - a. Mathematics Learning with Classroom Discussions
 - b. Practices for orchestrating productive mathematical discussions
- 4. Assessing students' mathematical knowledge and skills
 - a. Student-invented algorithms
 - b. Student misconceptions
 - c. Formative and summative assessments
- 5. Planning mathematics instruction
 - a. Problem-solving strategies
 - b. Connecting math to real-world application & across curriculum (STEM)
 - c. Choosing, appraising, and modifying tasks for a specific learning goal
 - d. Recognizing and using practices that promote equity in the math classroom

Tk20 at TTU

In efforts to improve our processes, manage candidate transition points, and track key assessments in program coursework, TTU's College of Education utilizes Tk20, a comprehensive data and reporting system. All College of Ed students are required to purchase and maintain a Tk20 account. The one-time system cost is \$133.33 at the university bookstore, and your account is valid for seven years. You will access Tk20 for a variety of tasks, including coursework, advisement, clinical experiences, Residency, portfolio-building edTPA tasks, and key program assessments. All professional education courses will include assessments within Tk20. Check your syllabi and consult your instructors for assessments that must be submitted to Tk20. Failure to purchase Tk20 can result in a "0" for Tk20 assignments and/or final course grade reduced a full letter. See our website for more details: <https://tntech.tk20.com>

Objective 1	Demonstrate implementation of TN State Math Standards through engaging lessons, focusing on both content and standards for mathematical practice.
Standard	(TPE Standards 1, 2, 3, 4, 5, 6, 7, 8)
Assignment(s)	Demonstration Lesson, Individual Lesson Plan, Mathematical Practices Presentation, Comprehensive Assignment
Assessment	Rubrics
Praxis test/topic (if applicable)	ELED: CIA (Mathematics Curriculum, Instruction, and Assessment); ELED: Content (Mathematics); PLT: K-6 (Students as Learners, Instructional Process, Assessment, Analysis of Instruction Scenarios)

Objective 2	Model the process of using multiple representations such as diagrams, drawings, and manipulatives.
Standard	(TPE Standards 1, 2, 3, 4, 5, 6, 7, 8, 11a)
Assignment(s)	Demonstration Lesson, Reading Responses, Mathematical Practices Presentation, Comprehensive Assignment
Assessment	Rubrics
Praxis test/topic (if applicable)	ELED: CIA (Mathematics Curriculum, Instruction, and Assessment); ELED: Content (Mathematics); PLT: K-6 (Students as Learners, Instructional Process, Assessment, Analysis of Instruction Scenarios)

Objective 3	Demonstrate the use of student-invented algorithms as opposed to traditional problem-solving techniques.
Standard	(TPE Standards 1, 2, 3, 4, 5, 6, 7, 8)

Assignment(s)	Demonstration Lesson, Reading Responses, Mathematical Practices Presentation, Comprehensive Assignment
Assessment	Rubrics
Praxis test/topic (if applicable)	ELED: CIA (Mathematics Curriculum, Instruction, and Assessment); ELED: Content (Mathematics); PLT: K-6 (Students as Learners, Instructional Process, Assessment, Analysis of Instruction Scenarios)

Objective 4	Develop math activities that are supportive of and engage the learners in an active, problem-solving, hands-on approach.
Standard	(TPE Standards 1, 2, 3, 4, 5, 6, 7, 8, 11a)
Assignment(s)	Demonstration Lesson, Individual Lesson Plan, Comprehensive Assignment, How to Learn Math Online Course
Assessment	Rubrics
Praxis test/topic (if applicable)	ELED: CIA (Mathematics Curriculum, Instruction, and Assessment); ELED: Content (Mathematics); PLT: K-6 (Students as Learners, Instructional Process, Assessment, Analysis of Instruction Scenarios)

Objective 5	Illustrate activities using various real-life and concrete examples.
Standard	(TPE Standards 1, 2, 3, 4, 7, 11a)
Assignment(s)	Demonstration Lesson, Comprehensive Assignment
Assessment	Rubrics
Praxis test/topic (if applicable)	ELED: CIA (Mathematics Curriculum, Instruction, and Assessment); ELED: Content (Mathematics); PLT: K-6 (Students as Learners, Instructional Process, Assessment, Analysis of Instruction Scenarios)

Objective 6	Explain the process of teaching children a math concept in such a way as to move them from the concrete and pictorial levels to the abstract.
Standard	(TPE Standards 1, 2, 3, 4, 5, 6, 7, 8, 11a)
Assignment(s)	Demonstration Lesson, Individual Math Lesson, Comprehensive Assignment
Assessment	Rubric
Praxis test/topic (if applicable)	ELED: CIA (Mathematics Curriculum, Instruction, and Assessment); ELED: Content (Mathematics); PLT: K-6 (Students as Learners, Instructional Process, Assessment, Analysis of Instruction Scenarios)

Objective 7	Address student common misconceptions in math through the use of formative and summative assessments.
Standard	(TPE Standards 1, 2, 3, 4, 6, 7, 8, 9, 11a)
Assignment(s)	Demonstration Lesson, Individual Lesson Plan, Comprehensive Assignment
Assessment	Rubric
Praxis test/topic (if applicable)	ELED: CIA (Mathematics Curriculum, Instruction, and Assessment); ELED: Content (Mathematics); PLT: K-6 (Students as Learners, Instructional Process, Assessment, Analysis of Instruction Scenarios)

Objective 8	Demonstrate the use of materials, media, and technology in learning, teaching, and communicating mathematical content.
Standard	(TPE Standards 1, 2, 3, 4, 5, 6, 7, 8, 11a)
Assignment(s)	Demonstration Lesson, Reading Responses, Individual Lesson Plan, Comprehensive Assignment
Assessment	Rubrics
Praxis test/topic (if applicable)	ELED: CIA (Mathematics Curriculum, Instruction, and Assessment); ELED: Content (Mathematics); PLT: K-6 (Students as Learners, Instructional Process, Assessment, Analysis of Instruction Scenarios)

Objective 9	Modify instructional plans to meet the needs of all learners in an inclusive classroom.
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Standard	(TPE Standards 1, 2, 3, 4, 5, 6, 7, 8, 9, 11a)
Assignment(s)	Demonstration Lesson, Mathematical Practices Presentation, Math Lesson Plan
Assessment	Rubric
Praxis test/topic (if applicable)	ELED: CIA (Mathematics Curriculum, Instruction, and Assessment); ELED: Content (Mathematics); PLT: K-6 (Students as Learners, Instructional Process, Assessment, Analysis of Instruction Scenarios)

Grading and Evaluation

Date Due	Assignments	Points Possible	Percentage Of Grade
See Calendar	Comprehensive Assignment 1. Central Focus Concept Outline - 20 2. Unpacking Central Focus - 10 3. Technology Integration - 15 4. Academic Vocabulary and Supports - 20 5. Differentiation Learning Circus - 30 6. Assessment Tasks - 20 7. Interdisciplinary Connections - 10	125	25%
9/5	How to Learn Math: For Students Online Course	50	10%
See Calendar	Mathematical Practices Presentation	75	15%
Each Week	Reading Responses/Reflections	100	20%
12/5	Math Lesson + Demonstration (TK20)	100	20%
	Disposition (25 points each - Midterm & Final)	50	10%
	Total Points - Grades will be updated regularly on iLearn.	500	100%

Grading Scale

A 93-100%	465-500
B 85-92%	425-464
C 77-84%	385-424
D 69-76%	345-384
F Below 69%	Below 345

The instructor reserves the right to adjust this syllabus with appropriate notice to students.